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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

FISCHER, MARK L

ART UNIT

PAPER NUMBER

2627

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/540,696	Applicant(s) DE BOER ET AL.	
	Examiner MARK FISCHER	Art Unit 2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 June 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 June 2008 and 11 June 2008 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. In response to the communication filed on June 11, 2008. Claims 1-8 are amended, and Claims 9-15 are new.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “duty cycle of 25%” (claim 13) and “a duty cycle during writing of each bit of the binary value that is different than a duty cycle of the laser during erasing” (claim 15) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will

be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claim 12 is objected to because of the following informalities: In claim 12, line 4, “where” should be changed to --were--. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 11 and 15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 11 recites the limitation that “the ***first*** and second ***signals are phase locked***”, however, the specification only discloses that the second signal is phase locked (see specification, page 4, line 22 and page 6, line 25) and does not disclose that the first signal is phase locked. Claim 15 discloses that “the laser has a duty cycle during writing of each bit of the binary value that is ***different*** than a duty cycle of the laser during erasing”, however the specification does not disclose a relation between the duty cycle during writing and the duty cycle during erasing in which the duty cycles are different.

Applicant is required to cancel the new matter in the reply to this office action.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 2, 4-6, 8, 9, 13 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Sakemoto et al. (US Pat. No. 5,007,039).

Regarding claim 1, Sakemoto et al. discloses an information recording apparatus designed for recording information on an optical medium, wherein irradiation means (7) emitting a light beam (7B) form series of recorded marks whose lengths between leading edge and trailing edge correspond to respective binary values (see Fig. 12A), wherein the irradiation means are sequentially pulsed from at least a high laser current write level to a low laser current level close to zero and back to the high laser current write level for each bit of a binary value during the writing period of a recorded mark to produce a plurality of current pulses during the writing period (see Fig. 12A).

Regarding claim 2, Sakemoto et al. discloses that the low laser current level is equal to zero (see Fig. 8A).

Regarding claim 4, Sakemoto et al. discloses that a bias level is reached during time intervals different from writing and/or erasing time intervals (i.e. when binary value is 0 in Fig. 12A), and wherein the bias laser current level is substantially equal to the low laser current level

(Fig. 12A shows that laser current level when binary value is zero is substantially equal to the low laser current level for recording).

Regarding claim 5, Sakemoto et al. discloses an information recording method for recording information on an optical medium by forming with a light beam (7B) emitted from irradiation means (7), series of recorded marks whose lengths between leading edge and trailing edge correspond to respective binary values (see Fig. 12A) by irradiation means with a beam of light, wherein the method comprises an act of sequentially pulsing the irradiation means from a high laser current write level to a low laser current level close to zero and back to the high laser current write level for each bit of a binary value during the writing period of a recorded mark to produce a plurality of current pulses during the writing period (see Fig. 12A).

Regarding claim 6, Sakemoto et al. discloses that the low laser current level is equal to zero (see Fig. 8A).

Regarding claim 8, Sakemoto et al. discloses that a bias level is reached during time intervals different from writing and/or erasing time intervals (i.e. when binary value is 0 in Fig. 12A), and wherein the bias laser current level is substantially equal to the low laser current level (Fig. 12A shows that laser current level when binary value is zero is substantially equal to the low laser current level for recording).

Regarding claim 9, Sakemoto et al. discloses an information recording apparatus designed for recording information on an optical medium, the apparatus comprising a laser (7) configured to emit a light beam (7B) to form series of recorded marks whose lengths between leading edge and trailing edge correspond to respective binary values (see Fig. 12A), wherein the laser is sequentially pulsed from at least a high laser current write level to a low laser current

level close to zero and back to the high laser current write level for each bit of a binary value during the writing period of a recorded mark to produce a plurality of current pulses during the writing period (see Fig. 12A).

Regarding claim 13, Sakemoto et al. discloses that the laser has a duty cycle of 20% (see Table in column 9) during writing of each bit of the binary value, which could be changed to an optimal duty cycle of 25% for realizing the optimal temperature in consideration of the types of the materials for the recording film of the recording medium (column 9, lines 24-28).

Regarding claim 14, Sakemoto et al. discloses that the laser has a duty cycle of 60% (see Table in column 9) during writing of each bit of the binary value, which could be changed to an optimal duty cycle of 50% for realizing the optimal temperature in consideration of the types of the materials for the recording film of the recording medium (column 9, lines 24-28).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
10. Claims 3 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakemoto et al. (US Pat. No. 5,007,039) in view of Applicant's Admitted Prior Art (hereinafter AAPA).

Regarding claim 3, Sakemoto et al. does not explicitly disclose that the irradiation means are sequentially pulsed to a high laser current erase level from the low laser current level close to zero during erasing of a recorded mark. However, AAPA discloses that the irradiation means are sequentially pulsed to a high laser current erase level from the low laser current level close to zero during the erasing of a recorded mark (Fig. 1). Note: AAPA Fig. 1 reads on the limitation sequentially pulsed to a high laser current erase level from the low laser current level close to zero during the erasing of a recorded mark as the low laser current level is the threshold level (TL), which is close to the x-axis, which is considered zero. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Sakemoto et al. with AAPA with the motivation to use a pulse technique for erasing that is similar to the pulse technique for recording, thus providing the benefits of the recording pulse technique to the erasure.

Regarding claim 7, Sakemoto et al. does not explicitly disclose the act of pulsing the irradiation means to a high laser current erase level from the low laser current level close to zero during the erasing of a recorded mark. However, AAPA discloses the act of pulsing the irradiation means to a high laser current erase level from the low laser current level close to zero during the erasing of a recorded mark (Fig. 1). Note: AAPA Fig. 1 reads on the limitation sequentially pulsed to a high laser current erase level from the low laser current level close to zero during the erasing of a recorded mark as the low laser current level is the threshold level

(TL), which is close to the x-axis, which is considered zero. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Sakemoto et al. with AAPA with the motivation to use a pulse technique for erasing that is similar to the pulse technique for recording, thus providing the benefits of the recording pulse technique to the erasure.

11. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakemoto et al. (US Pat. No. 5,007,039) in view of Watabe (US Pat. No. 6,747,935 B2).

Regarding claim 10, Sakemoto et al. does not explicitly disclose a multiplier configured to receive a first signal representing bit values for each of the bits of the binary value and a second signal that is a pulse pattern and of a higher frequency than the first signal, wherein an output of the multiplier is provided to the laser for controlling emission of the light beam. However, Watabe discloses a multiplier (sequencer, Fig. 1, element 303, carries out same function as the claimed multiplier) configured to receive a first signal (114) representing bit values for each of the bits of the binary value and a second signal (113) that is a pulse pattern and of a higher frequency than the first signal (see Fig. 3), wherein an output (light emission timing signal, 115) of the multiplier is provided to the laser for controlling emission of the light beam (115 is used to create signal to control LD2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Sakemoto et al. with Watabe with the motivation to use a well-known method of creating a multi-pulse signal that is related to a binary pattern.

Regarding claim 11, Watabe discloses that the first and second signals are phase locked (Fig. 1 shows that PLL is used as a reference by the sequencer, so the light emission timing signal is phase locked, and thus signals 113 and 114 are phase locked) such that a start of a write for each bit corresponds to a rising edge of the output of the multiplier (column 5, lines 53-65). The motivation for combination is found in the rejection of claim 10.

12. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sakemoto et al. (US Pat. No. 5,007,039) in view of Shikama et al. (US Pat. No. 4,811,329).

Regarding claim 12, Sakemoto et al. does not explicitly disclose that the laser is configured to emit a light beam of a higher power level than a conventional laser such that an average delta current of the laser is the same as if the laser were not sequentially pulsed. However, Shikama et al. discloses a laser that is configured to emit a light beam of a higher power level than a conventional laser such that an average delta current of the laser is the same as if the laser were not sequentially pulsed (column 4, lines 38-58). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Sakemoto et al. with Shikama et al. with the motivation to increase a proportion of the current usable for laser oscillation for the total amount of the current to be supplied to the laser beam source (column 5, lines 1-13).

13. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sakemoto et al. (US Pat. No. 5,007,039) in view of Chen (US Pub. No. 2005/0083828 A1).

Regarding claim 15, Sakemoto et al. does not explicitly disclose that the laser has a duty cycle during writing of each bit of the binary value that is different than a duty cycle of the laser during erasing. However, Chen discloses (see Fig. 8) a laser that has a duty cycle during writing (i.e. for writing, duty cycle is not 100%) of each bit of the binary value that is different than a duty cycle of the laser during erasing (i.e. for P_E , duty cycle is 100%).

Response to Arguments

14. Applicant's arguments with respect to claims 1-8 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARK FISCHER whose telephone number is (571) 270-3549. The examiner can normally be reached on Monday-Friday from 9:00AM to 6:30PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa Nguyen can be reached on (571) 272-7579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2627

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Fischer/

Examiner, Art Unit 2627

7/10/2008

/HOA T NGUYEN/

Supervisory Patent Examiner, Art Unit 2627